Blood Transfusion in Critical Care
Is your practice safe?

Outline
What is most likely reason patients in die as a result of blood product therapy?
Review the mechanisms of complications and death from the top three causes of transfusion related mortality?
Which products pose the greatest risk to the critically ill patient?
How can we reduce the risk of preventable transfusion related adverse events?
What’s new in blood product therapy?

A preventable death- transfusion related acute hemolyis

- 1: 100 000 transfusions in Canada
- Compared with 1: 4.5 million transfusions risk of dying from transfusion acquired HIV/AIDS
- Cause of preventable acute hemolytic transfusion reactions- Wrong blood in specimen tube
- "W.B.I.T" at the time of draw for the ABO/Rh group and crossmatch

AHTR- due to ABO incompatible red cells

- Most likely cause of death by acute hemolyis
- ABO incompatible transfused red cells are destroyed by the ABO antibodies in the patient’s plasma
- Hemolysis (debris and intravascular hemolysis) in the plasma damages kidneys and other organs
- Hypoxemia, hyperimmune response: shock
- Coagulopathy due to depleted clotting factors
- Pre-existing morbidity can contribute to catastrophic pathology
- If not fatal can leave patient with severe organ damage e.g. permanent hemodialysis

Error Prevention- myths

- I know my patient therefore this will never happen
- Blood Bank will always catch this error before patient is harmed i.e. by crossmatch blood in the bag and the patient’s specimen
- I will always check the patient’s armband before I draw blood samples so this will never happen
- Unfortunately death or severe morbidity can occur even if the above occur

The only way to ensure fatal preventable AHTR is prevented

- Perform positive patient identification
- Perform checks that are unequivocal
- Includes labels and the patient
- Is always done at the bedside in the presence of the patient
- Starts with crosscheck of each label against the armband
- End with tube labelling at the bedside before leaving the patient and only after a second crosscheck
How to contribute to a preventable death.

- Remove specimen tubes from the patient’s bedside unlabelled
- Checking only the armband and not the labels against the armband
- Not crosschecking the minimum of two unique identifiers e.g. name and hospital record number
- Presuming familiarity with the patient’s clinical status will “protect” him/her from such errors
- Ignoring early signs of hemolysis – fever, chills, back pain, changes in vital signs, changes in urinary status e.g. decreased output, red wine coloured urine

Transfusion Related Acute lung Injury

- Early detection and immediate reporting are critical
- In ICU: risk is under reporting or misdiagnosing
- Any sudden onset of hypoxia, fever, in most cases, hypotension during or within six hours of completion of a transfusion must be treated quickly and reported immediately to an MD and the Blood Bank
- Trigger: white cell antibodies in donor plasma damage causing leakage of fluid (non cardiogenic pulmonary edema)
- No way to screen for TRALI pre transfusion *
- Never presume another cause particularly in the patient with complex health care problem
- Only treatment: supportive – respiratory and hemodynamic prn

Why does the Blood Bank need to be notified

- Mandatory reporting to PHAC (Health Canada)
- *Tracking of donors, exclusion of donors (plasma) to reduce incidence risk
- Additional investigation of patient and donor (Additional patient bloodwork must go to CBS Winnipeg )

BACON

- Bacterial contamination
- Greatest risk: components especially platelets
- Start transfusing as soon as product arrives
- Delays of greater than 30 minutes from time product leaves Blood Bank increases risk of bacterial growth
- NEVER transfuse/infuse each bag or bottle longer than 4 hours after the time it was released by Blood Bank
- Use of coolers-precautions- never share or keep for longer than 4 hours

Bacterial Growth in Platelets

Be vigilant

- Follow hospital policies for positive patient identification, patient assessment, adverse reaction management and appropriate use of blood product therapy
- Federal blood safety standards- new normal nurses are accountable from vein to vein
- Utilize and support transfusion safety officers
- Nursing Leaders- do not dismiss errors and practice gaps - liaise with Transfusion Medicine- identify error trends and safe practice and environmental gaps
..and finally, what's new in blood product therapy these days

- Early 2008: Buffy coat production method of red cells, plasma and platelets
- Platelet pools are now 4 versus 5 donors
- Bags have changed slightly
- Platelets are now cultured by CBS not Blood Banks
- New products –new IVIG’s
- New products to treat bleeding: plasma complex concentrates (PCC’s) eg Octaplex

Thank you
Questions?